

REMARKS

Favorable reconsideration of this application in view of the remarks to follow is respectfully requested.

In the present Office Action dated August 4, 2005, Claim 1, 3-10 and 28-30 are rejected under 35 U.S.C. §103 as allegedly obvious over the combination of the article to E.M. Kakuno, et al. entitled “Structure, Composition, and Morphology of Electrodeposited $\text{Co}_x\text{Fe}_{1-x}$ Alloys”, J. Electrochemical Soc., Vol. 144, No. 9, September 9, 1997, pp. 3222-3226 (hereinafter “Kakuno”) and U.S. Patent No. 4,695,351 to Mallary (hereinafter “Mallary”). More specifically, the Examiner alleges that the example alloy compositions disclosed by Kakuno are encompassed by the instant claims and Kakuno’s alloys are made by a process substantially identical to the process for preparing applicants’ alloys. Thus the Examiner concludes that Kakuno’s alloys would be expected to possess the same properties as recited in the instant claims. The Examiner asserts that one skilled in the art would be motivated to apply a magnetic field as taught by Mallary to Kakuno’s electro-deposition process so as to obtain the claimed invention.

The Examiner also alleges that the 37 C.F.R. §1.132 Declaration of Hong Xu filed June 10, 2004 (hereinafter “the Declaration”) is not sufficient to overcome the rejection of Claims 1, 3-10 and 28-30. More specifically, the Examiner alleges that the instant claims are silent about certain properties of the claimed alloy films, such as the impurity level and crystal size, therefore the discussion in the Declaration comparing such properties of the claimed alloy films with that of the Kakuno’s alloy films are not persuasive. The Examiner also asserts that the Declaration is based on data of two alloys

(an alloy containing 64% Fe and an alloy containing 76% Fe), thus is not commensurate in scope to the claims.

Applicants respectfully submit that the Examiner fails to establish a *prima facie* case of obviousness because the cited references, solely or in combination, do not teach or suggest the present invention.

First, Kakuno's alloy films are produced by a process that is not substantially identical to the process for preparing applicants' alloy films, and consequently Kakuno's alloy films do not possess the characteristics of the claimed alloy films. Hence, the claimed alloy films are different from Kakuno's alloy films as a whole.

Regarding the electroplating method, it is well-known in the art that different electroplating conditions cause different morphology and crystallinity of the resulting films and therefore even the properties of electroplated films with the same composition can vary significantly depending on the electroplating conditions, such as bath chemistry, mixing method, current density, pH and temperature. The present application and Kakuno use markedly different plating processes. Specifically, the difference are: (1) the present process uses a paddle cell with continuous filtration, while Kakuno uses a stationary system (Kakuno, page 3222, the last paragraph of the right column); (2) the plating bath of the present process uses specific additives, such as mono or polycarboxylic acid(s), boric acid, aromatic sulfinic acid or a salt therof, optionally a halide salt, and optionally a surfactant, while the plating bath of Kakuno does not use any additives (Kakuno, page 3222, the last paragraph of the right column); and (3) the plating bath of the present process uses buffer and has a pH of about 2.5 to about 3.5, while the

plating bath of Kakuno does not adjust pH (Kakuno, page 3222, the last paragraph of the right column).

Notably, the subject matter relating to the process for preparing applicants' alloys has issued as U.S. Patent No. 6,855,240 B2 (US 6,855,240) and Kakuno is listed in the Other Publications section on the cover of US 6,855,240.

Furthermore, the properties of the inventive alloy films are markedly different from that of Kakuno's alloy films. The instantly claimed subject matter has limitations not only on the compositions of the present CoFe alloy films, but also on the properties of the inventive alloy films, such as a saturation magnetization of 2.3 Tesla or greater. It is common scientific knowledge that two substances with identical compositions may have substantially different properties. For example, the compositions of diamond and graphite are both carbon, but the physical properties of diamond and graphite, such as appearance and hardness, are markedly different. In the present application, in addition to the claimed anisotropy and saturation magnetization, applicants submitted the Declaration to demonstrate the distinct properties of the inventive alloy films over Kakuno's alloy films in magnetic moment, resistivity, B-H loops, crystallinity and impurity concentration.

According to the Declaration, the properties of the electroplated CoFe films prepared via the process of the present invention are significantly different from the CoFe films obtained via the process disclosed by Kakuno (see the Declaration, page 2, lines 13-21). Particularly, the magnetic moment for Kakuno's CoFe films comprising 64 wt% of Fe is 2.2 Tesla compared with 2.4 Tesla for the inventive CoFe films comprising 64 wt% of Fe (see the Declaration, page 10, lines 7-13). That is, Kakuno's alloy films

are inherently not able to possess the characteristics of the claimed alloy films (e.g., a saturation magnetization of 2.3 Tesla or greater) even if, *arguendo*, Kakuno's process is modified as suggested by the Examiner. In the context of high-density magnetic recording, a magnetic moment of 2.3 or 2.4 Tesla is substantially different from a magnetic moment of 2.2 Tesla. CoFe alloys have a wide application in magnetic recording industry, where every improvement in saturation magnetization is considered important. More magnetization can greatly improve the performance of magnetic recording devices because even a moderate magnetization improvement allows a higher field in the write pole of the recording head to be generated and therefore a higher coercivity recording media to be used. Consequently this media allows a higher density of bits to be recorded. It is well known in the field that materials with moderate difference, such as 0.1 Tesla, in magnetic moment can result in substantial differences in performance in high-density magnetic recording devices. Therefore, applicants submit that the present invention is distinctive and superior over Kakuno's alloy film when used as magnetic recording material.

Mallary is directed to a process for fabricating a yoke member with a magnetic flux conducting path. However, Mallary does not disclose a CoFe alloys having the instantly claimed composition and properties.

In view of the above, the cited references, solely or in combination, fail to disclose or recognize the applicants' claimed *cobalt-iron binary alloy electroplated film which has a saturation magnetization of 2.30 Tesla or greater, anisotropic and consisting of a binary alloy (100%-x) Co(x)Fe, where x is between about 60% and about 75% by weight.*

The §103 objection also fails because there is no suggestion in the cited references or otherwise of record which motivates one skilled in the art to combine and modify the disclosed methods and compositions in such a way to arrive at the inventive alloy films. “The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification.” *In re Vaeck*, 947 F.2d, 488, 493, 20 USPQ 2d. 1438, 1442 (Fed.Cir. 1991).

Therefore, applicants respectfully submit that the claims of the present application are not obvious over the combination of Kakuno and Mallary.

Regarding the comparison of certain properties, such as impurity levels and crystal sizes, of the claimed alloy films and that of the Kakuno’s alloy films in the Declaration, applicants submit that those properties are inherent properties of alloy films and the experimental data relating to those properties are presented in the Declaration as objective evidence for ascertaining the differences between the Kakuno’s alloy films and the claimed alloy films as a whole. “In determining whether the invention as a whole would have been obvious under 35 U.S.C. §103, we must first delineate the invention as a whole. In delineating the invention as a whole, we look not only to the subject matter which is literally recited in the claim in question... but also to those properties of the subject matter which are inherent in the subject matter and are disclosed in the specification... Just as we look to a chemical and its properties when we examine the obviousness of a composition of matter claim, it is this invention as a whole, and not some part of it, which must be obvious under 35 U.S.C. §103.” *In re Antonie*, 559 F.2d

618, 620, 195 USPQ 6,8 (CCPA 1977) (emphasis added by applicants) (citations omitted).

Moreover, the Declaration recites that the properties of the electroplated CoFe films prepared via the process of the present invention are significantly different from the CoFe films obtained via the process disclosed by Kakuno (see the Declaration, page 2, lines 13-21). That is, in the Declaration, the electroplated CoFe films prepared via the method of the present invention are compared with the CoFe films produced via the process disclosed in Kakuno (the Declaration, pages 3-6). In addition, applicants submit that, in view of the claimed iron constituent of the present alloy film, i.e., between about 60% Fe and about 75% Fe, the comparison of two embodiments of the present invention, i.e., CoFe alloy films containing 64% Fe and 76% Fe, with the corresponding Kakuno's alloys, are sufficient to show the superiority of the claimed alloy film over Kakuno's alloy film.

In view of the above remarks and the experiments evidenced in the 37 C.F.R. §1.132 Declaration dated June 10, 2004, applicants submit that the claims of the present invention are patentably distinguished from the combined disclosures of Kakuno and Mallary. Applicants thus respectfully request that the Examiner reconsider and withdraw the rejection under 35 U.S.C. §103 that is based upon the disclosures of Kakuno and Mallary.

Thus, in view of the foregoing remarks, it is firmly believed that the present case is in condition for allowance, which action is earnestly solicited.

Respectfully submitted,



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